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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/816,423	04/01/2004	Jeffrey L. Viola	10541-1930	8849
29074	7590	01/19/2006	EXAMINER WHITTINGTON, KENNETH	
VISTEON C/O BRINKS HOFER GILSON & LIONE PO BOX 10395 CHICAGO, IL 60610			ART UNIT 2862	PAPER NUMBER

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/816,423	Applicant(s) VIOLA, JEFFREY L.	
	Examiner Kenneth J. Whittington	Art Unit 2862	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 10, 11, 16-18, 25 and 26 is/are rejected.
- 7) ☒ Claim(s) 4-9, 12-15, 19-24 and 27-30 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.


**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received

  
**Bot Ledyne**  
**Primary Examiner**

**Attachment(s)**

- |                                                                                                    |                                                                             |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date: ____                                                 |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/1/04</u>                                                                | 6) <input type="checkbox"/> Other: ____                                     |

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## DETAILED ACTION

### *Abstract*

Applicant is reminded of the proper language and format for an abstract of the disclosure.

6       The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

18       The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

24       The abstract of the disclosure is objected to because it contains terms that can be implied, i.e., "The present invention provides". Correction is required. See MPEP § 608.01(b).

### *Drawings*

30       The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the magnet being attached to the end of the shaft as recited in claim 16 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended.

- 6 The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional
- 12 replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required
- 18 corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- 6 (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 10 and 11 rejected under 35 U.S.C. 102(e) as being anticipate by Friend et al. (US 6,653,831), hereinafter  
12 Friend. Regarding claims 1 and 2, Friend discloses a fluxgate (See Friend FIG. 4, items 130, 134, 138, note that since these coils/cores are saturated during measurement, they operate as fluxgates); a digital processor in communication with the fluxgate (See FIG. 4, items 1, 11 and 12) the digital processor including an analog to digital converter configured to digitize  
18 a back EMF signal from the fluxgate generating digitized back EMF signal (See FIG. 4, item 11, note that this circuit receives the back emf and provides a digital signal 214, see col. 15, lines 23-44), and a first signal generator configured to generate a fluxgate driving signal (See FIG. 4, note controller 1 has a portion that provides a signal 229 that is pulse width  
24 modulated, see col. 16, lines 32-67).

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Regarding claim 10, Friend discloses a current sourcing circuit configured to receive the driving signal from the first signal generator and transmit a current amplified signal to the fluxgate (See FIG. 4, items 6 and 9).

Regarding claim 11, Friend discloses a resistor in  
6 electrical series and a capacitor in electrical parallel between the first signal generator and the current sourcing circuit (See FIG. 4, items 236 and 238 and see col. 16, lines 32-67).

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Bogdanov (US 6,467,360). Regarding these claims,  
12 Bogdanov discloses a fluxgate (See Bogdanov FIG. 4, items 116 and 118); a digital processor in communication with the fluxgate (See FIG. 4, item 150) the digital processor including an analog to digital converter connected to a first and second coil output of the fluxgate and configured to digitize a back EMF signal from the fluxgate generating digitized back EMF signal (See FIG.  
18 4, item 152), and a first signal generator configured to generate a fluxgate driving signal (See FIG. 4, item 144).

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**Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanov in view of May et al. (US 5,681,480), hereinafter May. Regarding these claims, Bogdanov teaches the features as noted above and further teaches applying a magnetic material around a shaft, the fluxgate mounted about the shaft. However, Bogdanov does not teach a magnet mounted on the ends of the shaft. May teaches using a magnetic shaft in

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lieu of magnetic material mounted on the shaft and mounting magnets at various positions about the shaft, including the ends of the shaft (See May col. 3, line 57 to col. 4, line 45 and note designs all figures, particularly, FIG. 9a). It would have been obvious at the time the invention was made to incorporate  
6 the shaft and magnet design of May into the torque sensor of Bogdanov. One having ordinary skill in the art would have been motivated to do so reduce the manufacturing costs and simplify use as compared to ring type torque transducers (See same portion of May). Furthermore, the magnets can be place in multiple positions about the rod, including the ends, in order  
12 to create a more measurable magnetic field emanating from the magnetic rod (See May col. 9, lines 7-41).

Claims 16, 17, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friend in view of May. Regarding these claims, Friend teaches the features as noted  
18 above. However, Friend does not teach use of its fluxgate in a torque sensor. May teaches using a fluxgate sensor as a torque sensor for a magnetic shaft having magnets at its ends (See col. 3, line 57 to col. 4, line 45 and note designs in all the figures, particularly, FIG. 9a). It would have thus bee obvious at the time the invention was made to incorporate the fluxgate



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of Friend into the torque sensor of May. One having ordinary skill would have been motivated to do so because May notes that a variety of sensors can be used as its magnetic field sensors, but specifically notes that saturating core (fluxgate) type sensor are preferable for preferable for its magnetic field detection (See May col. 12, lines 47-62) and as noted in Friend, its saturable core sensor provides a greater range over traditional magnetometers (See col. 2, line 36 to col. 4, line 67).

***Allowable Subject Matter***

12        Claims 4-9, 12-15, 19-24 and 27-30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

      The following is a statement of reasons for the indication of allowable subject matter:

18        Regarding claims 4 and 19, while the prior art show similar analog processing (See Dombrowski US 6,341,534), the prior art does not show the processor reversing the sign of the digitized back emf signal at a frequency corresponding to two times the frequency of the drive signal, in combination with the other features of the claims. Claims 5-9 and 20-24 have allowable

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subject matter for the same reasons therefor based on their dependency.

Regarding claims 12 and 27, the prior art does not show first and second signal generators in electrical communication with the current sourcing circuit, the current sourcing circuit containing first to fourth transistors, in combination with the other features of the claims. Claims 13-15 and 28-30 have allowable subject matter for the same reasons therefor based on their dependency.

### *Conclusion*

12 The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The cite prior art and articles teach varying designs for fluxgate and/or torque sensors using fluxgates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Whittington whose telephone number is (571) 272-2264. The examiner can normally be reached on Monday-Friday, 7:30am-4:00pm.

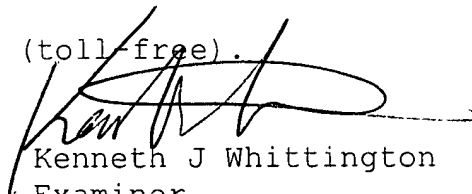
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the

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organization where this application or proceeding is assigned is  
571-273-8300.

Information regarding the status of an application may be  
obtained from the Patent Application Information Retrieval  
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Business Center (EBC) at 866-217-9197 (toll-free).

12



Kenneth J Whittington  
Examiner  
Art Unit 2862

kjw